Amendments to the Claims:

Please amend the claims as follows:

1. (Currently Amended) A sound-wave imaging method ~~including~~ ,comprising:

at least one emission step during which a first array of transducers is caused to emit at least one ultrasound excitation wave presenting a certain central emission frequency f_c and focused on at least one target point in a target medium, and said excitation wave is caused to pass through a reverberant ~~medium~~ solid object prior to reaching the target medium,

~~the method being characterized in that during the emission step, a reverberant solid object is used as the reverberant medium, with~~ each transducer of the first array being secured ~~thereto,~~ to said reverberant solid object and said reverberant solid object being adapted to give rise to multiple reflections of the excitation wave that passes therethrough and to cause an impulse wave of duration $1/f_c$ entering into said solid object to lead to sound emission to the target medium taking place over a duration of not less than $10/f_c$;

at least a reception step wherein echoes emitted by the target medium in response to the excitation wave are received; and

an imaging step wherein an image of at least a portion of said target medium is built based on the received echoes.

2. (Currently Amended) ~~A~~ The method according to claim 1, in which during the emission step, the excitation wave s(t) is emitted towards a number K not less than 1 of predetermined target points k belonging to the target medium, by causing each transducer i of the first array to emit an emission signal:

$$s_i(t) = \sum_{k=1}^{K} e_{ik}(t) \otimes s(t)$$

where the signals eik(t) are predetermined individual emission signals adapted so that when the transducers i emit the signals eik(t), an impulse sound wave is generated at the target point k.

3. (Currently Amended) ~~A~~ The method according to claim 2, in which the signals eik(t) are encoded on a number of bits lying in the range 1 to 64.

4. (Currently Amended) ~~A~~ The method according to claim 3, in which the signals eik(t) are coded on 1 bit.

5. (Currently Amended) ~~A~~ The method according to claim 2, in which the individual emission signals eik(t) are determined experimentally during a training step, prior to said emission step.

6. (Currently Amended) ~~A~~ The method according to claim 5, in which during the training step, an ultrasound impulse signal is caused to be emitted successively from each predetermined target point k, the signals rik(t) received by each of the transducers i of the first array from the emission of said ultrasound impulse signal are picked up, and the individual emission signals eik(t) are determined by time reversal of the received signals rik(t):

$$e_{ik}(t) = r_{ik}(-t).$$

7. (Currently Amended) ~~A~~ The method according to claim 6, in which, during the training step, a liquid medium different from the target medium is put into contact with

the reverberant solid object, and said impulse signal is caused to be emitted from said liquid medium.

8. (Currently Amended) ~~A~~ The method according to claim 5, in which, during the training step, for a predetermined target point k, an ultrasound impulse signal is caused to be emitted in succession from each of the transducers i of the first array, the signals rik(t) received at the target point k from the emission of said ultrasound impulse signals are picked up, and the individual emission signals eik(t) are determined by time reversal of the received signals rik(t):

$$e_{ik}(t) = r_{ik}(-t).$$

9. (Currently Amended) ~~A~~ The method according to claim 8, in which, during the training step, a liquid medium different from the target medium is put into contact with the reverberant solid object, and the signals rik(t) are picked up in said liquid medium.

10. (Currently Amended) ~~A~~ The method according to claim 7, in which the liquid medium used during the training step essentially comprises water, and in which during the emission step, the target medium in which the excitation wave is focused comprises at least a portion of the body of a patient.

11. (Currently Amended) ~~A~~ The method according to claim 2, in which the individual emission signals eik(t) are determined by calculation.

12. (Currently Amended) ~~A~~ The method according to claim 1, in which the reverberant solid object through which the excitation wave is caused to pass during the emission step is in contact with the target medium.

13. (Currently Amended) ~~A~~ The method according to claim 1, further comprising a step of receiving echoes emitted by the target medium in response to the excitation wave, in order to image at least a portion of said target medium.

14. (Currently Amended) ~~A~~ The method according to claim 1~~3~~, in which the excitation wave is emitted for a duration lying in the range $1/2f_c$ to $10/f_c$.

15. (Currently Amended) ~~A~~ The method according to claim 1~~3~~, in which:

· during the emission step, the excitation wave passes through at least one acoustically non-linear medium and presents an amplitude that is sufficient for waves that are harmonics of the central emission frequency to be generated in said acoustically non-linear medium; and

· during the reception step, echoes returned from the target medium are picked up selectively at a receive frequency that is an integer multiple of the central emission frequency.

16. (Currently Amended) ~~A~~ The method according to claim 15, in which the harmonic waves are generated in the target medium, which presents non-linear acoustic behavior.

17. (Currently Amended) ~~A~~ The method according to claim 15, in which, during the reception step, the echoes returning from the target zone are picked up selectively at a receive frequency equal to two or three times the central emission frequency.

18. (Currently Amended) ~~A~~ The method according to claim 1~~3~~, in which, during the emission step, the target medium in which the excitation wave is focused comprises at least a portion of the body of a patient.

19. (Currently Amended) ~~A~~ The method according to claim 1~~3~~, in which, during the reception step, the echoes returning from the target zone are picked up by means of a second array of transducers secured to said reverberant solid object.

20. (Currently Amended) ~~A~~ The method according to claim 1, in which, during the emission step, an amplitude modulated excitation wave is emitted that is adapted to apply radiation pressure on the target medium to generate a low frequency shear wave.

21. (Currently Amended) ~~A~~ The method according to claim 20, in which, during the emission step, the target medium in which the excitation wave is focused, comprises at least a portion of the body of a patient.

22. (Currently Amended) ~~A~~ The method according to claim 1, in which, during the emission step, an excitation wave is emitted that is adapted to heat the target medium locally.

23. (Currently Amended) A sound-wave imaging apparatus comprising at least:

emitter means comprising a first array of transducers, said emitter means being adapted to cause at least one ultrasound excitation wave to be emitted by the first array of transducers through a reverberant ~~medium~~ solid object having the transducers of the first array secured thereto, the emitted wave presenting a certain central emission frequency f_c and being focused on at least one target point of a target medium,

~~the apparatus being characterized in that the reverberant medium comprises a reverberant solid object having each of the transducers of the first array secured thereto,~~ said reverberant solid object being adapted to give rise to multiple reflections of the excitation wave passing therethrough and to cause an impulse wave of duration $1/f_c$ entering said solid object to lead to sound being emitted towards the target medium over a duration of not less than $10/f_c$;

receiver means for receiving echoes emitted by the target medium in response to the excitation wave, and;

imaging means for building an image of at least a portion of said target medium based on the received echoes.

24. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 23, in which, the emitter means are adapted to cause the excitation wave s(t) to be emitted to a number K not less than 1 of predetermined target points k belong to the target medium, by causing each transducer i of the first array to emit an emission signal:

$$s_i(t) = \sum_{k=1}^{K} e_{ik}(t) \otimes s(t)$$

where the signals eik(t) are predetermined individual emission signals adapted so that when the transducers i emit the signals eik(t), an impulse sound wave is generated at the target point k.

25. (Cancelled)

26. (Currently Amended) ~~Apparatus~~ The apparatus according to claim ~~25~~ 23, in which the emitter means are adapted to emit the excitation wave for a duration lying in the range $1/2f_c$ to $10/f_c$.

27. (Currently Amended) ~~Apparatus~~ The apparatus according to claim ~~25~~ 23, in which the receiver means are adapted to receive ~~to~~ the echoes returning from the target medium, selectively at a receive frequency that is an integer multiple of the central emission frequency.

28. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 27, in which the receiver means are adapted to receive the echoes returning from the target medium, selectively at a receive frequency equal to ~~twice~~ 2 or 3 times the central emission frequency.

29. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 26, in which the receiver means comprise a second array of transducers secured to said reverberant solid object.

30. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 23, in which the emitter means are adapted to emit an excitation wave adapted to apply radiation pressure on the target medium.

31. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 23, in which the emitter means are adapted to emit an excitation wave adapted to heat the target medium locally.